

REMARKS

Claims 1-16 and 18-51 are currently pending in the subject application and are presently under consideration. Claims 1, 6, 20, 23, 31, 45 and 50 have been amended as shown on pages 2-10 of Reply. A version of the claims can be found on pages 2-10 of the Reply.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Objection of Claims 1-7, 9, 10, 12, 18-21, 28, 31, 33-38, 40, 45 and 48-51

Claims 1-7, 9, 10, 12, 18-21, 28, 31, 33-38, 40, 45 and 48-51 are objected to because of the certain informalities. Withdrawal of the objection is requested in view of amendments to independent claims 1, 6, 20, 31, 45 and 50.

II. Rejection of Claims 1-51 Under 35 U.S.C. § 101

Claims 1-51 stand rejected under 35 U.S.C. § 101. In view of amendments to claims 1, 6, 20 and 23, withdrawal of the rejection is requested.

III. Rejection of Claims 1-6, 8-14, 18-22, 31-34 and 36-51 Under 35 U.S.C. §102(e)

Claims 1-6, 8-14, 18-22, 31-34 and 36-51 stand rejected under 35 U.S.C. §102(e) as being anticipated by Bandini *et al.* (US Publication 2002/0199095). Bandini *et al.* does not teach each and every element of the claimed subject matter as recited in the subject claims.

A single prior art reference anticipates a patent claim only if it expressly or inherently describes *each and every limitation* set forth in the patent claim. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). *The identical invention must be shown in as complete detail as is contained in the ... claim.* *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). (emphasis added).

The claimed subject matter relates to systems and methods that facilitate detecting spam messages in part by scanning messages using a filter trained on IP address or URL features and another filter independently trained on text-related features and/or other features extractable from a message. In particular, independent claim 1 recites *a machine-implemented system that*

facilitates spam detection comprising: a feature extraction component that receives an item and extracts a set of features associated with an origination of a message or part thereof and/or information that enables an intended recipient to contact or respond to the message, a feature analysis component that analyzes a subset of the extracted features in connection with building and employing a plurality of feature-specific filters that are independently trained to mitigate undue influence of at least one feature type over another in the message, the subset of extracted features comprising of at least one of a URL and an IP address, and the plurality of feature-specific filters comprising at least a first feature-specific filter and a machine learning component that determines last IP address external to the recipient's system via a machine learning technique to facilitate spam detection. Independent claims 6, 20, 31, 45 and 50 also recite similar limitations. Bandini *et al.* does not teach or suggest the aforementioned novel aspects of applicants' claimed subject matter.

Bandini *et al.* provides for system and method for filtering communication. An e-mail relay monitors incoming communication and compares attributes of the messages to data derived from SPAM messages, which is stored in a SPAM database. The e-mail relay restricts the delivery of the message based on the comparison such as by restricting the delivery of messages having attributes close to those of SPAM messages from the SPAM database. However nowhere Bandini *et al.* teaches or suggests *deciphering which is the last IP address external to the system*, the identification of which is employed to classify the message as spam or legitimate.

At page 10 of the Final Office Action, it is erroneously asserted that Bandini *et al.* teaches, *the machine learning component employs MX records to determine a true source of a message by way of tracing back through a received from list until an IP address is found that corresponds to a fully qualified domain which corresponds to an entry in the domain's MX record; and determines whether the IP address is external or internal by performing at least one of the following: concluding that the IP address is in a form characteristic to internal IP addresses; and performing at least one of an IP address lookup and a reverse IP address lookup to ascertain whether the IP address correlates with a sender's domain name*, with respect to dependent claim 18. The cited portion of the reference (Bandini *et al.*) provides for an e-mail relay performing one or more evaluation steps using various attributes of an incoming message which includes sender address, recipient list, subject, body, embedded URLs, and IP of sending relay. In one evaluation, the sender address of the incoming e-mail message is compared to

sender addresses of SPAM messages from the SPAM database. In another evaluation, any Uniform Resource Locator (URL) included in an incoming message is compared to URLs contained records of the SPAM database. Finally, in a another evaluation, the identity of the Internet Protocol (IP) address or internet domain from which a SPAM message was received is compared to the IP address or internet domains for the incoming message (*See*, Paragraphs [0026], [0027], [0031] & [0032]). Hence Bandini *et al.* provides for filtering of incoming e-mail messages by comparing sender's address, URL and IP address of incoming messages with those of stored in SPAM database. More particularly, Bandini *et al.* provides for *comparing an attribute of a message to same attribute for stored messages in the SPAM database*. For example, IP address of incoming message is only compared against IP addresses of messages stored in SPAM database. However Bandini *et al.* does not contemplate *determining IP address corresponding to a fully qualified domain which corresponds to an entry in the domain's MX record*. Hence Bandini *et al.* fails to teach or suggest determining a true source of a message *by way of tracing back through a received from list until an IP address is found that corresponds to a fully qualified domain which corresponds to an entry in the domain's MX record*. Through this feature, the present invention facilitates determining true source of a message as a spammer may try to confuse spam filters by changing his IP addresses regularly or adding as many URLs as he wants to the message (*See*, Spec. Page 17-19). Hence a conventional filter or e-mail relay as disclosed by Bandini *et al.* would not able to identify the SPAM message as it would only compare IP address of incoming message against IP address of stored messages in the SPAM database.

At page 11 of Final Office Action, it is erroneously asserted that Bandini *et al.* teaches *examining messages classified as good by a user to learn which servers are internal*, with respect to dependent claim 19. The reference (Bandini *et al.*) provides for allowing users to report the e-mail message as SPAM by selecting the URL (*See*, Paragraph [0036]). An e-mail relay compares incoming e-mail messages to a collection of e-mail messages in a SPAM database. The e-mail relay determines whether the comparison score has already exceeded the SPAM threshold level. If the comparison score has already exceeded the SPAM threshold level, the comparison operation reports the message as SPAM. If the comparison score is below the borderline threshold level the message is reported as clean (*See*, Fig. 3, step 70, 72 & 78). Hence Bandini *et al.* only provides for extracting attributes of incoming messages, comparing them with

attributes of stored known SPAM messages in the SPAM database and reporting the message as SPAM if the comparison score exceed the SPAM threshold level. Further Bandini *et al.* also provides for allowing users to report the e-mail message as SPAM by selecting the URL. However nowhere Bandini *et al.* teaches or suggests *learning which servers are internal by examining messages classified as good by a user.*

Accordingly, applicants' representative respectfully submits that Bandini *et al.* fails to teach or suggest all limitations of applicants' claimed subject matter as recited in independent claims 1, 6, 20, 31, 45 and 50 (and claims that depend there from). Consequently, this rejection should be withdrawn.

IV. Rejection of Claims 15, 16, 23-30 Under 35 U.S.C. §103(a)

Claims 15, 16, 23-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bandini *et al.* in view of Rothwell *et al.* (US Publication 2003/0088627). Withdrawal of this rejection is requested for at least the following reasons. Bandini *et al.* and Rothwell *et al.* either alone or in combination, fail to teach or suggest all features of the subject claims.

[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 706.02(j). See also KSR Int'l Co. v. Teleflex, Inc., 550 U. S. ____, 04-1350, slip op. at 14 (2007). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art and not based on applicant's disclosure. See In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

The claimed subject matter relates to systems and methods that facilitate detecting spam messages in part by scanning messages using a filter trained on IP address or URL features and another filter independently trained on text-related features and/or other features extractable from a message. In particular, independent claim 1 recites *a machine-implemented system that facilitates spam detection comprising: a feature extraction component that receives an item and extracts a set of features associated with an origination of a message or part thereof and/or information that enables an intended recipient to contact or respond to the message, a feature analysis component that analyzes a subset of the extracted features in connection with building and employing a plurality of feature-specific filters that are independently trained to mitigate*

undue influence of at least one feature type over another in the message, the subset of extracted features comprising of at least one of a URL and an IP address, and the plurality of feature-specific filters comprising at least a first feature-specific filter and a machine learning component that determines last IP address external to the recipient's system via a machine learning technique to facilitate spam detection. Bandini *et al.* and Rothwell *et al.* do not teach or suggest the aforementioned novel aspects of applicants' claimed subject matter.

As stated supra, Bandini *et al.* fails to teach or suggest the claimed invention. The Examiner acknowledges that the primary reference, Bandini *et al.* does not teach the claimed invention and provides a secondary reference, Rothwell *et al.*, to compensate for the after mentioned deficiencies of Bandini *et al.* Rothwell *et al.*, given by Examiner, relates to a system and method for detecting an unwanted message using a neural network engine; and this reference does not teach the claimed invention.

At page 18 of the Final Office Action, it is incorrectly contended that Rothwell *et al.* teaches *at least one of the feature-specific filters models dependencies*, with respect to dependent claim 15. The cited portion of the reference (Rothwell *et al.*) provides for a statistical analyzer decomposing incoming electronic messages to determine an amount of various SPAM indicators *i.e.* capitalization, punctuation, URLs, phone numbers. The results of the parsing are passed to the neural network engine. The neural network engine can be used in combination with the statistical analyzer to accept or deny electronic messages (*See*, Paragraph [0025]). Hence Rothwell *et al.* provides for only decomposing incoming messages to determine various SPAM indicators by a statistical analyzer and accepting or denying electronic messages. However Rothwell *et al.* nowhere teaches or suggests *feature-specific filters models dependencies*. As the source of spam is highly correlated with its content, an explicit assumption of independence of models, *i.e.* the first feature-specific filter being trained independently of a second feature-specific filter to mitigate either filter influencing the other when filtering the message, is not very accurate. The first feature-specific filter is trained using IP addresses or URLs and the second feature specific-filter is trained using a subset of features extracted from the message other than a URL and an IP address. Model types which assume independence between all features like Naïve Bayes models, typically have mediocre performance for spam filtering when compared to other model types (*e.g.*, support vector machines (SVMs), perceptrons, maximum entropy (a.k.a. logistic regression), neural networks) that explicitly model dependence. Hence the claimed

subject matter employs *feature-specific filters modeling dependencies* and facilitates improving performance of spam filtering.

In view of at least the foregoing, it is clear that Bandini *et al.* and Rothwell *et al.* fail to teach each and every aspect recited in subject claims. Therefore, it is respectfully requested that this rejection of subject claims 15, 16, 23-30 be withdrawn.

V. Rejection of Claims 7 and 35 Under 35 U.S.C. §103(a)

Claims 7 and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bandini *et al.* in view of Jungck (US Patent 7,003,555). It is respectfully requested that this rejection be withdrawn for at least the following reasons. Bandini *et al.* and Jungck either alone or in combination do not teach or suggest all aspects set forth in the subject claims. In particular, Jungck does not make up for the aforementioned deficiencies of Bandini *et al.* with respect to independent claims 6 and 31 (which claims 7 and 35 depend from). Thus, the subject invention as recited in the claims 7 and 35 is not obvious over the combination of Bandini *et al.* and Jungck. Accordingly, it is respectfully submitted that this rejection should be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP596US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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